Notebook to support Exercise 3.4.8, modeling yeast population growth.

The data, in time/population pairs.

In[14]:=
```
data = {{0, 9.6}, {1, 18.3}, {2, 29}, {3, 47.2}, {4, 71.1}, {5, 119.1},
  {6, 174.6}, {7, 257.3}, {8, 350.7}, {9, 441}, {10, 513.3}, {11, 559.7},
  {12, 594.8}, {13, 629.4}, {14, 640.8}, {15, 651.1}, {16, 655.9}, {17, 659.6}}
```

A plot:

In[15]:=
```
plt1 =
 ListPlot[data, AxesLabel → {"time (hours)", "Population (millions)"}, PlotStyle → {Red}]
```

The number of data points is

In[16]:=
```
n = Length[data]
```

Given that u(0) = 9.6, the solution to the logistic equation with intrinsic growth rate "r" and carrying capacity "K" is

In[17]:=
```
u[t_] = K / (1 + Exp[-r * t] * (K / 9.6 - 1))
```

A least-squares function can be formed as

In[18]:=
```
SS = Sum[(u[data〚j, 1〛] - data〚j, 2〛)^2, {j, 1, n}]
```

Now adjust r and K to minimize this.